

R E M A R K S

The Examiner rejects claims 48-63 under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement to enable one skilled in the art to make or use the invention. More specifically, the Examiner contends at the middle of page 3 of the Office Action that there is insufficient disclosure as to how the feature of the generation of the 3D head is made possible on the monitor.

During the interview, it was pointed out that at page 2 of Applicant's specification the preferred embodiment for the 3D monitor is described at the last four lines as follows:

“An example is the 3D monitor by the company Actuality Systems that generates a real three-dimensional image of a subject to be imaged. A two-dimensional calculated image is thereby project (ed) on a rotating plane, such that a three-dimensional image exists for an observer.”

That company, Actuality Systems, is well known to those skilled in this art as evidenced by its web page currently on the Internet and is located at Bedford, Massachusetts.

It is believed that part of the Examiner's problem was the statement in Applicant's specification and previous claim 48 as previously amended that the visualization image was “not on a solid surface”. This has been deleted from claim 48 since, as is disclosed at page 2 of the specification, with the Actuality Systems 3D monitor, a 2D image is projected on a rotating plane and thus may be considered to be on a solid surface. Additionally, the specification has been amended at page 16, the paragraph beginning at line 16 to eliminate the language “not on a solid surface but” and to reference the previously mentioned commercially available Actuality Systems 3D monitor.

One skilled in the art can readily perform or use the invention claimed in claim 48 based on Applicant's disclosure. Claim 48 recites a volumetric 3D monitor which is commercially available and it is clear how the image is presented in 3D space – namely on a rotating 2D surface. As shown in Fig. 1 of Applicant's specification the surrounding associated surface 45 is outwardly of the image. As disclosed in Applicant's specification, page 20, middle paragraph, this surface may be a virtual surface 45 defining the display volume 8. This is readily understandable to one skilled in the art.

Next, the invention of claim 48 recites a selection unit so that a reference point is selected on this virtual surface where a direction unit specifying the direction from the reference point to the point selected by the user in the image and a distance unit to set a distance value from the reference point along the direction to the point being selected in the visualization image. This is entirely understandable to one skilled in this art and one skilled in this art may readily perform the invention with the commercially available 3D monitor and a unit and/or software which identifies direction and distance between two defined points.

Since the language "not on a solid surface but" has been eliminated from claim 48, Applicant submits that the Section 112, paragraph 1 rejection is no longer applicable in view of the commercially available 3D monitor. Reconsideration is therefore respectfully requested.

The Examiner rejects 48-63 under 35 U.S.C. §103 as unpatentable over Cosman in view of Neff and further in view of Nissen.

There are at least two reasons why claim 48 readily distinguishes. First, claim 48 recites a volumetric 3D monitor which shows the 3D volumetric visualization image of the three-dimensional data set in 3D space surrounded by an associated

surface or surfaces outwardly spaced from the 3D volumetric 3D space visualization image. Cosman only has a 2D monitor shown in Fig. 1 and therefore Fig. 12A is not a 3D visualization image. Rather Fig. 12A is only a representative showing of a person's head illustrating the data, but is not a three-dimensional visualization image. Furthermore, in Figure 12A, Cosman teaches directly away from the invention by putting reference points such as 924, 928, 926, 920 directly on the head rather than on a surface which is spaced from the visualization image as required by claim 38.

A second and even more important reason why claim 48 distinguishes is by the recitation that a reference point is definable with respect to the visualization image, said reference point being definable on the associated surface *outwardly spaced* from the 3D volumetric 3D space image. But Cosman does not teach this. In claim 48, the associated surface is not part of the 3D image but is recited as being outwardly spaced from the 3D space visualization image. Cosman teaches directly away from this. In Cosman, a patient needs to be present so that a physician can choose certain points actually on the patient to construct a surface which can be correlated with a coordinate system of an image scanner, and therefore with images taken by the scanner. This is shown in Cosman Figure 16. But in the invention of claim 48, only recorded image data needs to be shown in order to select a point in the visualization of that data to help a user handle the data. Therefore in the invention of claim 48, the entire selection of a point in the visualization of the data takes place at the 3D monitor in the visualization itself and not in a remote real object patient.

In Cosman, the points selected with the space probe 808 are used to obtain an image surface and are not selected *in a visualized image* as required by claim 48.

Also the selection unit of Cosman employs a space probe 808 which does not select points on the surface that surrounds the visualization of the 3D image, but rather on a surface apart from the visualization – the patient's head. Also the direction specified by the space probe 808 of Cosman does not obtain a direction with respect to the visualization but rather with respect to the patient. As the surface is retrieved out of the selected points on the patient, in Cosman this direction is related to the retrieved surface, but not directly to the image data obtained by an image scanner as in claim 48.

Claim 48 requires that the distance unit sets a distance value from the reference point on the spaced surface to the point being selected in the visualization image. This is directly contrary to Cosman since in Cosman a distance is detected from a point outside a patient's head to a point inside the head. Therefore ultrasound is used. This is not determining a distance to a point inside a visualization image, but rather to a point inside an actual patient's head.

The secondary reference of Neff does not satisfy the deficiencies of Cosman since Cosman was only cited for a curved surface providing a 3D display surface. At the recited surface spaced from the space visualization image is nowhere disclosed nor is the reference point on that surface spaced from the 3D visualization image.

Nissen also does not satisfy the deficiencies of Cosman since Nissen also does not disclose the 3D volumetric visualization image with the spaced surface on which a reference point is selected. In Nissen, there is only disclosure of two points being provided, one predefined and one selected, to define a vector. If one wanted to use that teaching in the method of Cosman one would have to select a point inside a patient's head. But neither Cosman nor Nissen teach how to select a point inside a real patient's head. And even if there were such a teaching, this would be

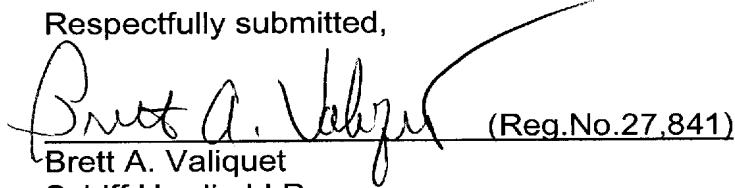
contrary to claim 48 where the point is inside the space visualization image, such as of a patient's head, and not actually inside a patient's head.

Dependent claims 49-63 distinguish at least for the reasons noted with respect to claim 48 and also by reciting additional features not suggested.

Allowance of the application is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required, or to credit any overpayment to account No. 501519.

Respectfully submitted,



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